

WHAT IS CLAIMED IS:

1. A vehicle alternator control device comprising:  
voltage control means for controlling an output voltage of a vehicle alternator by turning on and off a first switching means connected in series with a field coil of the alternator; and

power supply means for supplying the operating voltage of the voltage control means; and

power supply control means for starting an operating voltage generating operation of the power supply means when a frequency of a phase voltage of an armature coil of the alternator exceeds a first reference frequency, and stopping the operating voltage generating operation of the power supply means when the phase voltage frequency drops below a second reference frequency that is lower than the first reference frequency.

2. A vehicle alternator control device as set forth in claim 1, wherein:

the first reference frequency is less than twice a threshold speed under a full excitation state of the alternator; and

the second reference frequency is less than the threshold speed.

3. A vehicle alternator control device as set forth in claim 1, further comprising:

second switching means provided between a reference potential side of a vehicle battery and a terminal for detecting the phase voltage; and

switching control means for controlling the second switching means to an on state for only a specific time when the phase voltage exceeds a reference voltage.

4. A vehicle alternator control device as set forth in claim 3, further comprising:

field current supply means for supplying a field current to the field coil when the switching control means controls the second switching means to the on state.

5. A vehicle alternator control method for an alternator having an armature coil and a field coil, and switching means for controlling a field current supply to the field coil thereby to regulate an output voltage of the armature coil, the method comprising steps of:

detecting a frequency of the output voltage of the armature coil;

starting the field current supply to the field coil after the detected frequency rises to a first reference frequency; and

stopping the field current supply to the field coil after the detected frequency drops below a second reference frequency which is lower than the first reference frequency.

6. A vehicle alternator control method as set forth in claim 5, further comprising a step of:

lowering the output voltage of the armature coil for a predetermined time period after a start of rotation of the rotor.

7. A vehicle alternator control method as set forth in claim 6, wherein:

the frequency detecting step compares the output voltage of the armature coil with a first reference voltage to detect the frequency; and

the lowering step compares a peak of the output voltage of the armature coil with a second reference voltage which is lower than the first reference voltage to control a voltage lowering operation.

8. A vehicle alternator control method as set forth in claim 6, further comprising a step of:

effecting the field current supply to the field coil during the predetermined time period before the field current supply to the field coil is started by the starting step.

9. A vehicle alternator control method as set forth in claim 5, wherein the first reference frequency and the second reference frequency are higher and lower than a predetermined frequency which corresponds to an idle speed of an engine, respectively.